



US009392338B2

(12) **United States Patent**
Taylor

(10) **Patent No.:** **US 9,392,338 B2**
(45) **Date of Patent:** ***Jul. 12, 2016**

(54) **APPARATUS, SYSTEMS AND METHODS TO COMMUNICATE AUTHORIZED PROGRAMMING BETWEEN A RECEIVING DEVICE AND A MOBILE DEVICE**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 585 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **13/891,596**

(22) Filed: **May 10, 2013**

(65) **Prior Publication Data**

US 2013/0268959 A1 Oct. 10, 2013

Related U.S. Application Data

(63) Continuation of application No. 13/439,699, filed on Apr. 4, 2012, now Pat. No. 8,452,261, which is a continuation of application No. 11/950,803, filed on Dec. 5, 2007, now Pat. No. 8,175,579.

(51) **Int. Cl.**
H04N 21/6334 (2011.01)
H04L 29/06 (2006.01)

(52) **U.S. Cl.**

CPC **H04N 21/6334** (2013.01); **H04L 63/0807** (2013.01); **H04L 63/102** (2013.01); **H04L 63/18** (2013.01); **H04L 2463/101** (2013.01)

(58) **Field of Classification Search**

CPC H04L 2463/101; H04L 63/102
USPC 455/411, 419, 515, 3.01, 410, 3.06, 455/414.1

See application file for complete search history.

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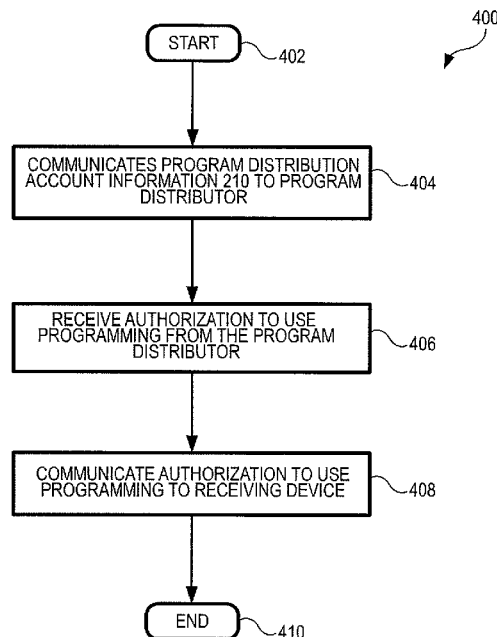
Primary Examiner — John J Lee

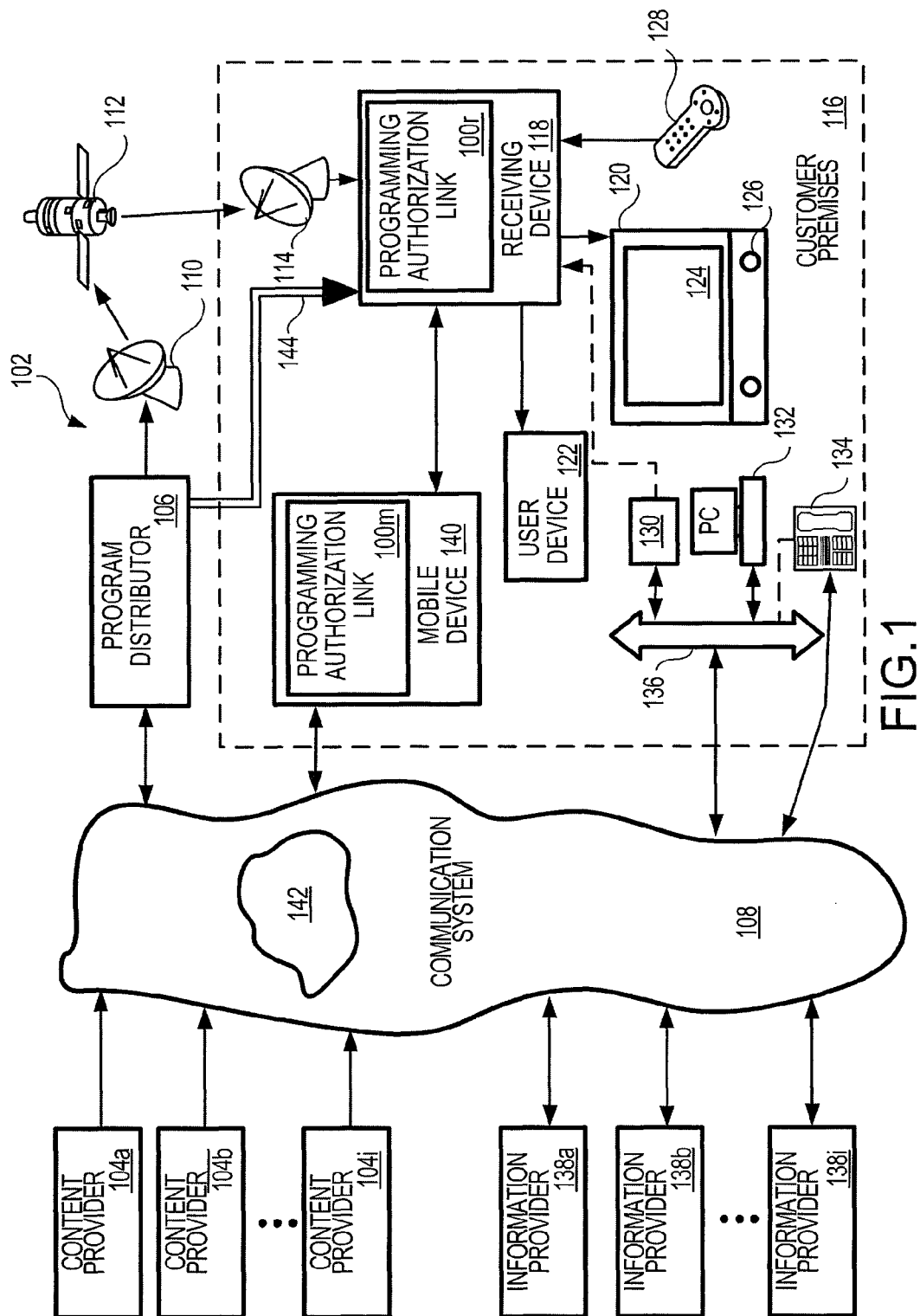
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(57) **ABSTRACT**

A mobile device embodiment communicates program distribution account information to a program distributor. The mobile device embodiment receives from the program distributor, authorization to use programming that is conditioned on the communicated program distribution account information. The mobile device embodiment communicates the authorization to a receiving device.

20 Claims, 4 Drawing Sheets





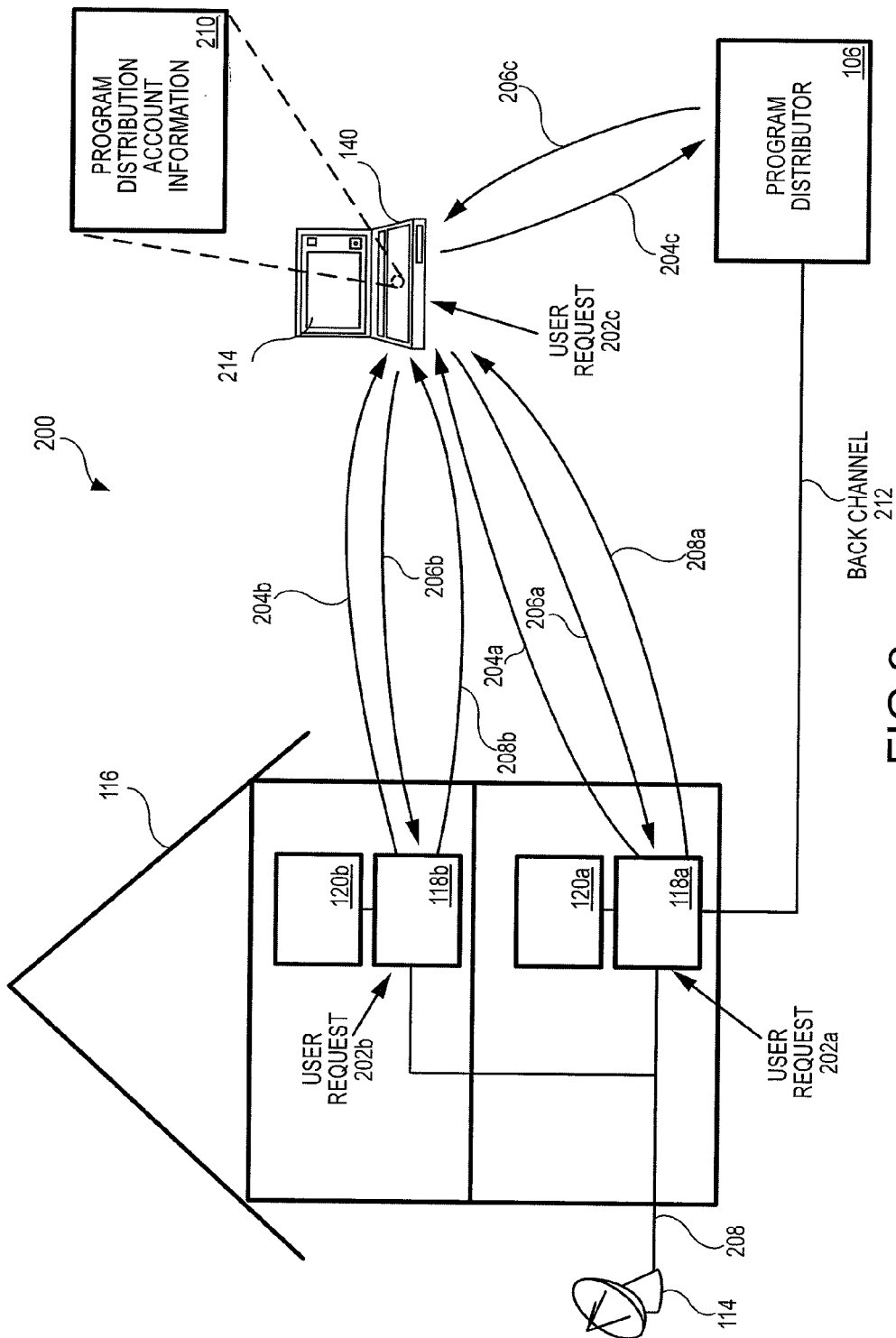


FIG. 2

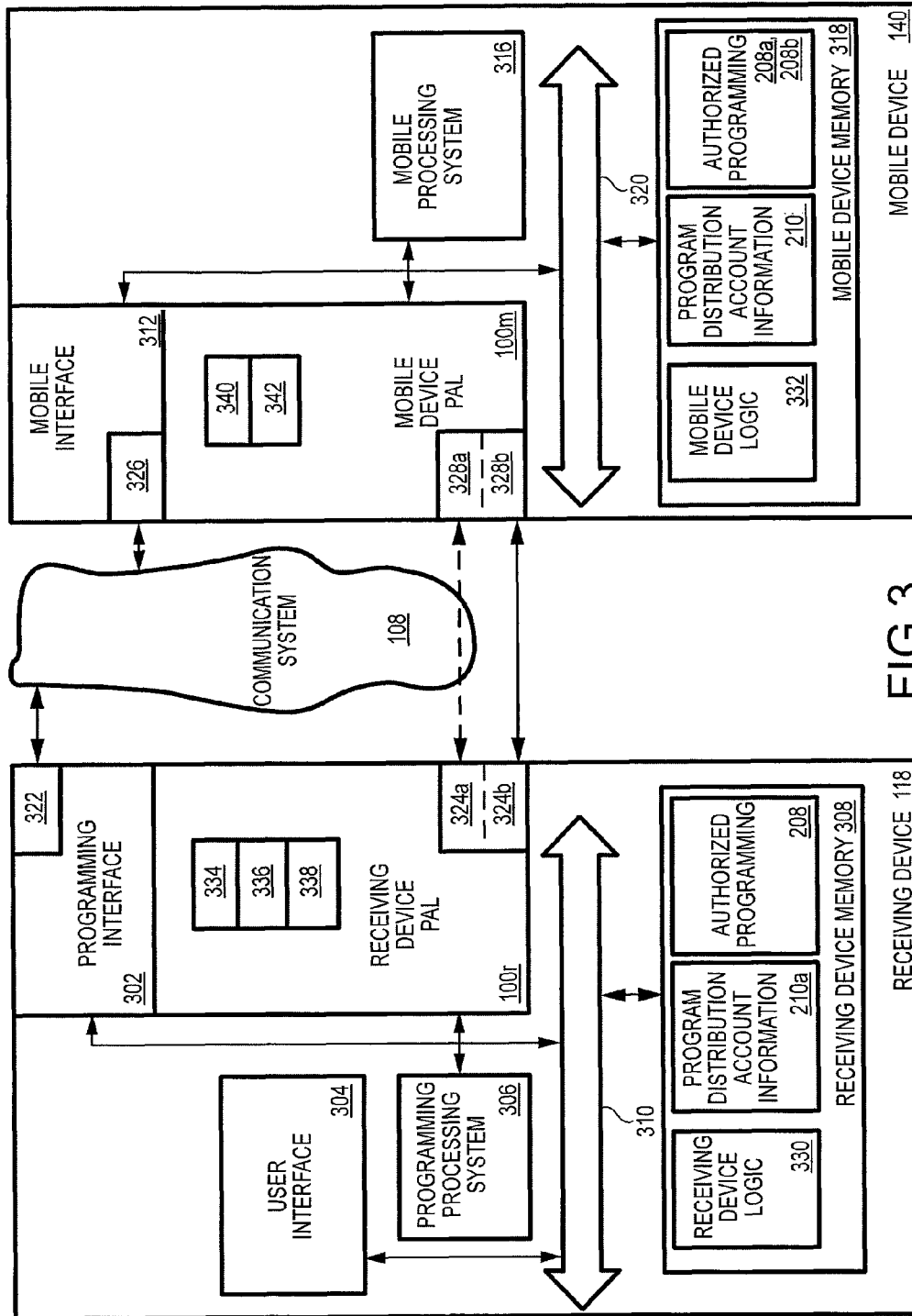


FIG.3

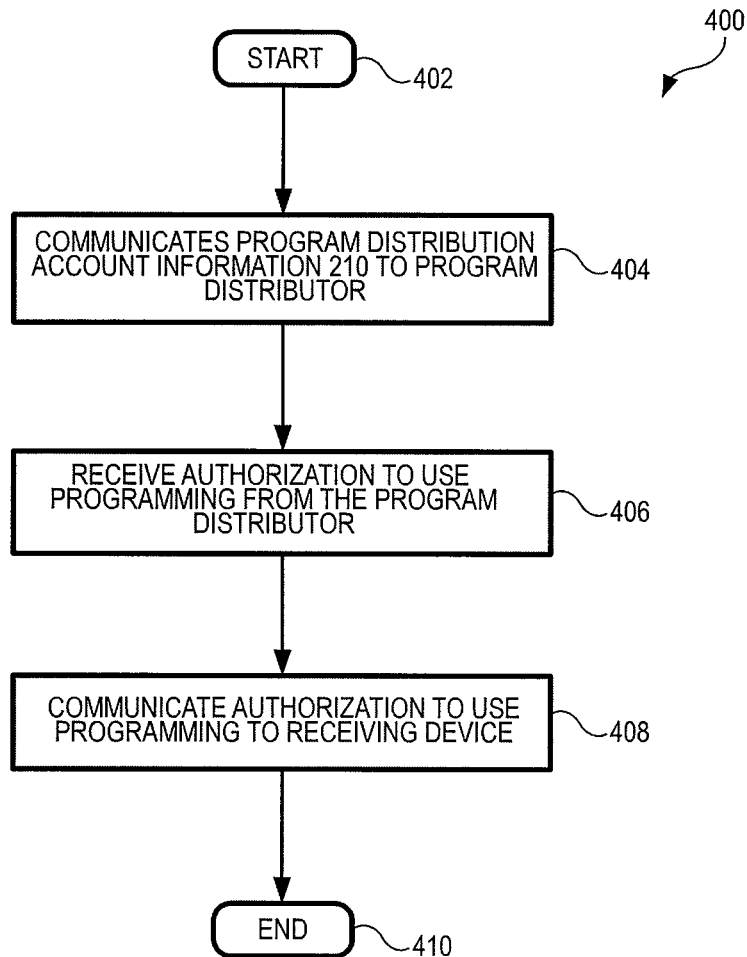


FIG.4

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APPARATUS, SYSTEMS AND METHODS TO COMMUNICATE AUTHORIZED PROGRAMMING BETWEEN A RECEIVING DEVICE AND A MOBILE DEVICE

CROSS-REFERENCE TO RELATED APPLICATION

This application is a continuation of U.S. patent application Ser. No. 13/439,699, filed Apr. 4, 2012, now allowed, which is a continuation of U.S. patent application Ser. No. 11/950,803, filed Dec. 5, 2007, now U.S. Pat. No. 8,175,579, which applications are incorporated herein by reference in their entirety.

TECHNICAL FIELD

The technical field relates to systems and methods for communicating programming and, more particularly, to apparatus, systems, and methods to communicate authorized programming between a receiving device and a mobile device.

BRIEF SUMMARY

Apparatus, systems, and methods for communicating programming are disclosed. According to one embodiment, a method includes communicating program distribution account information to a program distributor via a mobile device, receiving at the mobile device, from the program distributor, authorization to use programming, the authorization conditioned on the communicated program distribution account information, and storing the programming in a memory in the mobile device.

According to yet another embodiment, a mobile device has a processing system, a memory coupled to the processing system, the memory operable to store program distribution account information, a first communication interface operable to communicate the program distribution account information to the program distributor and further operable to receive an authorization from the program distributor, and a second communication interface operable to communicate the authorization to a receiving device.

According to another embodiment, a receiving device operable to communicate with mobile devices includes a first interface operable to receive from a mobile device, authorization to use authorized programming, a programming interface operable to receive the authorized programming from a program distributor, and a second interface operable to communicate the authorized programming to the mobile device.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

The components in the drawings are not necessarily to scale relative to each other. Like reference numerals designate corresponding parts throughout the several views.

FIG. 1 is an overview block diagram illustrating an exemplary communication network.

FIG. 2 is a block diagram illustrating an embodiment of a system to communicate authorization requests, authorization, and authorized programming between a receiving device, a mobile device, and a program distributor.

FIG. 3 is a block diagram illustrating a receiving device and a mobile device.

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FIG. 4 is a flowchart illustrating a process used by an embodiment of a system to communicate authorized programming between a receiving device and a mobile device.

DETAILED DESCRIPTION

FIG. 1 is an overview block diagram illustrating an exemplary communication network 102 in which embodiments of programming authorization links (PAL's) 100r and 100m may be implemented. FIG. 1 is just one example of a communications network 102, and the various embodiments discussed herein are not limited to this exemplary network.

A receiving device PAL 100r and a mobile device PAL 100m cooperatively facilitate communication between a receiving device 118, a mobile device 140, and a program distributor 106. For example, some circumstances may arise where a user wants to request authorized programming for delivery to a receiving device 118. In these circumstances, the request for authorized programming may be entered into the receiving device 118 and communicated to a program distributor 106 via the PAL's 100r, 100m. If the program distributor 106 grants the request, the authorization to use the programming may be communicated back from the program distributor 106 to the receiving device 118 via the PAL's 100r, 100m.

A receiving device PAL 100r is operationally coupled to a receiving device 118. In some embodiments, the receiving device PAL 100r may be integrated into the receiving device 118, and in other embodiments, the receiving device PAL 100r may be external to the receiving device 118. The receiving device PAL 100r may share hardware and/or software components with the receiving device 118, or the hardware and/or software components of the receiving device PAL 100r may primarily be operational for functions of the receiving device PAL 100r.

The mobile device PAL 100m is operationally coupled to a mobile device 140. In some embodiments, the mobile device PAL 100m may be integrated into the mobile device 140, and in other embodiments, the mobile device PAL 100m may be external to the mobile device 140. The mobile device PAL 100m may share hardware and/or software components with the mobile device 140, or the hardware and/or software components of the mobile device PAL 100m may primarily be operational for functions of the mobile device PAL 100m.

Communication network 102 can include a variety of communication systems and can use a variety of communication media including, but not limited to, satellite wireless media. In a satellite wireless example, communications network 102 may include an uplink dish 110, a satellite 112, and a downlink dish 114. In another non-limiting example, the communications network 102 may include a land-based cable infrastructure 144.

Program distributors 106 use communication system 108 to provide their customers with a multitude of audio/video and/or data programming at their premises 116. The programming provided by program distributors 106 may originate from one or more content providers 104a-104i, one or more information providers 138a-138i, from a program distributor 106 itself, and/or from another third party (not shown). The programming is received at the customer premises 116 via a receiving device 118 which may be communicatively coupled to a presentation device 120 configured to receive and present programming.

The customer of the program distributor 106 may be an individual person, a business, or any other entity that subscribes to programming from the program distributor 106. In contrast, a user of programming (a "user") may be a customer

of the program distributor **106**, but the user is not necessarily a customer. Thus, it is to be appreciated that a user may be any person, electronic device, or other entity that hears, sees, processes, or otherwise uses received programming.

The programming received and used at the customer premises **116** is authorized by the program distributor **106**. The programming may be authorized on a revolving subscription basis, the programming may be authorized for a fixed time period, the programming may be authorized per use, and/or the programming may be authorized in any other suitable manner. In one non-limiting example, a user may request authorization for a single cost for each use of programming. In another non-limiting example, a user may request authorization to use premium programming, such as commercial-less broadcasts, first-run movies, sporting contests, and the like. It is to be appreciated that authorization from the program distributor **106** may originate from the program distributor **106**, the content providers **104a-104i**, the information providers **138a-138i**, and/or another third party.

In some instances, the programming is received after it has been authorized. In some instances, the programming is encoded such that the programming may be received unconditionally and decoded after it has been authorized.

At the customer premises **116**, receiving device **118** interconnects to one or more communications media and/or programming delivery systems (such as a cable head-end, satellite antenna, telephone company switch, Ethernet portal, off-air antenna, or the like) that propagate and/or deliver the programming. The receiving device **118** commonly receives a plurality of programming by way of the communications media and/or programming delivery systems.

From the plurality of programming, a user may select specific programming to hear, view, process, and/or otherwise use. In some embodiments, the programming may be used when a receiving device **118** processes and communicates the selected programming to one or more presentation devices **120**. In some embodiments, the programming may be used when a receiving device **118** processes and communicates the selected programming to one or more endpoint devices, such as PCs **132**, telephonic systems **134**, user devices **122**, data storage devices, TVs, game systems, sound system receivers, Internet connection devices, digital subscriber loop (DSL) devices, wireless LAN, WiFi, Worldwide Interoperability for Microwave Access (WiMax), and/or other intermediary devices **130**.

Receiving device **118** may be interchangeably referred to by a general device description such as a "television converter," "receiver," "set-top box," "television receiving device," "television receiver," "programming receiver," "television recording device," "satellite set-top box," "satellite receiver," "cable set-top box," "cable receiver," and/or "television tuner." Accordingly, the receiving device **118** may be any suitable converter device or electronic equipment that is operable to receive programming. Further, the receiving device **118** may itself include user interface devices, such as buttons or switches. In many applications, the receiving device **118** (and also the presentation device **120**, and/or other user devices **122**) may be controlled by a remote device **128** in such a manner as to provide enhanced functionality and/or an enhanced presentation of the programming to a user.

The customer premises **116** where the receiving device **118** is located may be a business, home, multiple dwelling unit, or other facility to which the programming is delivered. In many implementations, one or more presentation devices **120** are located in or near a customer's premises **116** and are communicatively coupled directly or indirectly to the receiving device **118**.

Examples of a presentation device **120** include, but are not limited to, a television (TV), a personal computer (PC), a sound system receiver, a digital video recorder (DVR), a compact disk (CD) device, a game system, or the like. Presentation devices **120** may employ a display **124**, one or more speakers **126**, or other output devices to communicate video, audio, and/or data content to a user.

Some customer premises **116** include an optional network **136**, or a networked system, to which receiving devices **118**, presentation devices **120**, and/or a variety of user devices **122** (collectively referred to as endpoint devices), can be coupled. Non-limiting examples of network **136** include, but are not limited to, an Ethernet, twisted pair Ethernet, an intranet, a local area network (LAN) system, or the like. One or more endpoint devices, such as PCs **132**, telephonic systems **134**, data storage devices, TVs, game systems, sound system receivers, Internet connection devices, digital subscriber loop (DSL) devices, wireless LAN, WiFi, Worldwide Interoperability for Microwave Access (WiMax), or other intermediary devices **130**, are communicatively coupled to network **136** so that the plurality of endpoint devices are communicatively coupled together. Thus, the network **136** allows the interconnected endpoint devices, and the receiving device **118**, to communicate with each other.

Users of programming may also use mobile devices **140**. Some non-limiting examples of mobile devices **140** are cell phones, personal media players (PMP's), personal digital assistants (PDA's), laptop computers, handheld personal computers (HPC's), and the like. Such mobile devices **140** may permit a user of the mobile device to create, edit, and manage information. Such mobile devices **140** may additionally and/or alternatively permit a user of the mobile device **140** to communicate with target destinations by sending and/or receiving information.

Mobile devices **140** may communicate with receiving devices **118**. A mobile device **140** and a receiving device **118** may communicatively couple to each other via one or more wireless circuits and/or protocols, for example, but not limited to, Bluetooth, infrared, UHF, WiFi, another radio frequency (RF), or the like. For example, in some embodiments, the mobile device **140** has a Bluetooth radio chipset that is operatively used to communicate with a corresponding Bluetooth radio chipset of the receiving device **118**. As another example, the mobile device **140** and the receiving device **118** may have hardware and software configured to communicate via an IEEE 802.11 protocol. In some embodiments, the communicative coupling between a wireless circuit of the mobile device **140** and a wireless circuit of the receiving device **118** is based on proximity, signal availability, and/or the like.

Alternatively, or additionally, mobile devices **140** and receiving devices **118** may communicatively couple with each other via one or more physical mediums and protocols such as, but not limited to, USB, IEEE 1394 (FireWire), Ethernet, twisted pair, and the like. For example, a mobile device **140** may be docked in a cradle coupled to the receiving device **118** via a USB cable. In some embodiments, the communicative coupling between the mobile device **140** and the receiving device **118** only occurs when the mobile device **140** is physically coupled to the receiving device **118**.

In some embodiments, the mobile device **140** has a non-cellular radio chipset. The mobile device **140** may then communicate with a target destination via a medium such as a private radio link, an open format radio link, or another digital and/or analog RF medium.

In some embodiments, the mobile device **140** has an integrated cellular radio chipset. Thus, communication to a target

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destination may be via a medium such as, but not limited to, a commercial and/or private cellular network, or the like.

A cellular network **142** is broadly encompassed within the communication system **108**. The cellular network **142** may be any available network suitable for transmitting and receiving data between mobile and/or fixed point devices, or the cellular network **142** may be dedicated to a primary purpose of delivering the information to known cellular subscribers and/or receiving information from known cellular subscribers. Accordingly, cellular subscribers may receive and transmit information between a mobile device **140** and a target destination. It is to be appreciated that the cellular network **142** may include both wired and wireless infrastructure; for example, transceivers, repeaters, switches, antennas, access points, routers, public switched telephone networks, codecs, multiplexers, de-multiplexers, and the like.

FIG. 2 is a block diagram illustrating an embodiment of a system **200** to communicate authorization requests **204a**, **204b**, **204c**, authorization **206a**, **206b**, **206c**, and authorized programming **208**, **208a**, **208b** between a receiving device **118**, a mobile device **140**, and a program distributor **106**. The authorization requests **204a**, **204b**, **204c**, authorization **206a**, **206b**, **206c**, and authorized programming **208**, **208a**, **208b** are conceptually illustrated in FIG. 2 as arrowed lines, which indicate the direction that the information is communicated. It is to be appreciated that in some embodiments, in order to facilitate the information flow as illustrated, additional communications may occur in the opposite direction. For example, in some embodiments, requests or other communications in one direction may be acknowledged with communications in the other direction. In additional and/or other circumstances, devices may operate in a master/slave and/or polled configuration where communication may also occur in multiple directions.

The exemplary system **200** includes a customer's premises **116**. A customer's premises **116** may have one or more receiving devices **118a**, **118b** coupled to respective presentation devices **120a**, **120b**. One or more receiving devices **118a**, **118b** may be communicatively coupled to a downlink dish **114**, a land-based cable infrastructure **144** (FIG. 1), or the like in order to receive authorized programming **208**. One or more receiving devices **118a**, **118b** may be coupled to the program distributor **106** via a back-channel wired or wireless communication system **212**, for example, a plain old telephone system (POTS), an integrated services digital network (ISDN) line, a voice over Internet protocol (VoIP) system, and/or other suitable system.

The authorization requests **204a**, **204b**, **204c** may originate as user requests **202a**, **202b**, **202c** (also illustrated as arrowed lines). In some instances, a user request **202a**, **202b** may be entered into a receiving device **118a**, **118b**. In other instances, a user request **202c** may be entered into a mobile device **140**. A user may enter a user request **202c** into the mobile device **140** when the mobile device **140** is inside the customer's premises **116**, near the customer's premises **116**, and/or far away from the customer's premises **116**.

In some instances, a user may want to use programming that has not previously been authorized by a program distributor **106**. To use the programming, the user must communicate with the program distributor **106** and make a request.

In exemplary embodiments of the system **200**, a programming authorization link **100m** (FIG. 1) of a mobile device **140** may be cooperatively engaged to request authorization from the program distributor **106** via an authorization request **204c**. Upon receipt of authorization **206c** from the program distributor **106**, the authorized programming **208** received by a receiving device **118a**, **118b** may then be used.

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In some instances, a user may want to use the authorized programming **208** with a mobile device **140**. For example, the mobile device **140** may have sufficient memory to store authorized programming **208a**, **208b**, and thus the mobile device **140** may be used as additional storage space for authorized programming **208a**, **208b**. In another example, a user may want to use the mobile device **140** to present and/or process authorized programming. Accordingly, the authorized programming **208a**, **208b** may be communicated to the mobile device **140** for immediate and/or future use, such as for output to a display **214** of the mobile device **140**. It is to be appreciated that authorized programming **208a**, **208b** is all or part of authorized programming **208**. Authorized programming **208a**, **208b** may be communicated to mobile device **140** with one or more receiving devices **118a**, **118b**, respectively.

As described above, authorized programming **208**, **208a**, **208b** may be used in many different ways. Additionally, various embodiments allow users to request authorization for programming using a plurality of different processes. For example, in some embodiments, a user may be situated in close proximity to a receiving device **118a**, **118b**. Thus, a user may request authorization for programming via a user request **202a**, **202b** entered into a receiving device **118a**, **118b**. In cases where the user's request **202a**, **202b** is entered into a receiving device **118a**, **118b**, the receiving device **118a**, **118b** may process the user's request **202a**, **202b** into an authorization request **204a**, **204b**. The authorization request **204a**, **204b** may then be communicated to the mobile device **140** for processing and/or communication to the program distributor **106**.

As another example, a user may conveniently have access to a mobile device **140**. Accordingly, the user may request authorization for programming via a user request **202c** entered directly into the mobile device **140**. The user request **202c** may be entered via a user interface on the mobile device **140**, and/or the user request **202c** may be entered via another suitable means. When the user request **202c** is entered into a mobile device **140**, the user request **202c** may be further processed within the mobile device **140**.

In some cases, the user may enter a request to use authorized programming with an external source, such as a remote device **128**, a PC **132** (FIG. 1), or other suitable device. Further, in some embodiments, the user may enter the request directly into a user interface integrated in and/or coupled to the receiving device **118a**, **118b**.

Upon receipt of an authorization request **204a**, **204b** from a receiving device **118**, and/or upon receipt of a user request **202c** into the mobile device **140**, the request may be further processed to produce an authorization request **204c**. Subsequently, the authorization request **204c** may be communicated by the mobile device **140** to the program distributor **106**.

In some embodiments, the user request **202c** and/or the authorization request **204a**, **204b** includes program distribution account information **210**. The program distribution account information **210** may be communicated to the program distributor **106** as part of authorization request **204c**, or the program distribution account information **210** may be communicated in a different manner. For example, if the program distribution account information **210** is already available to the program distributor **106**, an authorization request **204c** may have an identifier embedded therein so that the program distributor can relate the authorization request **204c** to the corresponding user.

The program distribution account information **210** may include any information necessary for the program distributor **106** to sufficiently identify the user and determine whether or not to grant the authorization. For example, program distri-

bution account information **210** may optionally include, but is not limited to, information about the user such as physical addresses, credit account information, and/or billing account information. Thus, a program distributor **106** may condition the issuance of authorization to use programming on one or more elements communicated in, and/or derived from, the program distribution account information **210**.

Conditional authorization by an authorizing party, such as a content provider **104a-104i** (FIG. 1), an information provider **138a-138i** (FIG. 1), and/or a program distributor **106** that authorizes the use of programming may be performed by the authorizing party in any suitable manner. For example, if the program distributor **106** determines from the program distribution account information **210** that the user is a current and/or past customer in good standing, then the program distributor **106** may automatically authorize use of the programming. In another example, the program distributor **106** may derive sufficient information from the program distribution account information **210** such that the program distributor **106** may immediately receive payment (or a promise of payment) for the programming. Thus, once payment is assured, the program distributor **106** may immediately authorize use of the programming. In other circumstances, information embedded in or derived from the program distribution account information **210** satisfies conditions established by the program distributor **106** that are necessary for the program distributor **106** to grant authorization. That is, authorization is conditioned on the communicated program account distribution information **210** indicating to the authorizing party that the authorization request **206c** should be authorized.

Program distribution account information **210** may be stored in a memory in the mobile device **140**. In some instances, program distribution account information **210** may be received by a mobile device **140** from a program distributor **106**. In other instances, program distribution account information **210** may be entered into the mobile device **140** by a user and/or another electronic device (not shown). In some embodiments, program distribution account information **210** may be communicated to a mobile device **140** from a receiving device **118a, 118b**. When the program distribution account information **210** is communicated from a receiving device **118a, 118b**, the information may be communicated as part of an authorization request **204a, 204b**, or the information may be communicated with a different message (not shown).

The mobile device **140** may be operable to receive from the program distributor **106**, an authorization **206c** to use the programming. The authorization **206c** may be in response to a specific authorization request **204c**. Additionally, or alternatively, the authorization **206c** may be communicated by the program distributor **106** without having been requested. For example, if the program distributor **106** were to offer a “free weekend of premium programming” to past authorized users as a promotion, the program distributor **106** may send authorization **206c** to the mobile device **140** at any suitable time.

Upon receipt of authorization **206c**, the mobile device **140** may process the authorization **206c**. Processing the authorization **206c** may include internal configuration of the mobile device **140** to permit use of the authorized programming **208a, 208b** with the mobile device **140**. For example, authorization **206c** may permit configuration of the mobile device **140** for presenting authorized programming **208a, 208b** on a display **214** integrated with and/or coupled to the mobile device **140**. Alternatively, and/or additionally, processing the authorization **206c** may include generation of authorization **206a, 206b**, for subsequent communication to a receiving device **118a, 118b**.

Upon generation of authorization **206a, 206b**, the mobile device **140** may be operable to communicate the authorization **206a, 206b** to a receiving device **118a, 118b**. In some embodiments, once the authorization **206a, 206b** is communicated by the mobile device **140**, the receiving device **118a, 118b** is allowed by the authorizing party to use authorized programming **208**. In other embodiments, the receiving device **118a, 118b** must further process the authorization **206a, 206b**. For example, in some circumstances, the receiving device **118a, 118b** will acknowledge the authorization **206a, 206b** and communicate back to the program distributor **106**, the content provider **104a-104i**, the information provider **138a-138i**, and/or another authorizing party.

FIG. 3 is a block diagram illustrating a non-limiting example of a receiving device **118** and a mobile device **140**. Receiving device **118** comprises programming interface **302**, receiving device PAL **100r**, programming processing system **306**, receiving device memory **308**, and receiving device system bus **310**. Mobile device **140** comprises mobile interface **312**, mobile device PAL **100m**, mobile processing system **316**, mobile device memory **318**, and mobile device system bus **320**.

In the receiving device **118** embodiment illustrated in FIG. 3, receiving device PAL **100r**, programming interface **302**, user interface **304**, programming processing system **306**, and receiving device memory **308**, are illustrated as communicatively coupled to each other via receiving device system bus **310**. In the embodiment of mobile device **140** illustrated in FIG. 3, mobile device PAL **100m**, mobile interface **312**, mobile processing system **316**, and mobile device memory **318** are illustrated as communicatively coupled to each other via mobile device system bus **320**.

Receiving device system bus **310** and/or mobile device system bus **320** provide connectivity between the above-described components within receiving device **118** and/or mobile device **140** respectively. Receiving device system bus **310** and/or mobile device system bus **320** may include any known signal communication architectures. In alternative embodiments, the above-described components may be communicatively coupled in a different manner than illustrated in FIG. 3. For example, one or more of the above-described components may be directly coupled to other components, or may be coupled to each other, via intermediary components (not shown). In some embodiments, receiving device system bus **310** and/or mobile device system bus **320** may be omitted and the respective components of receiving device **118** and/or mobile device **140** may be coupled directly to each other using suitable connections.

Receiving device **118** has a programming interface **302** to receive authorized programming **208** (FIG. 2) from a program distributor **106** (FIGS. 1 and 2). Programming interface **302** may be configured to receive programming from a land-based cable infrastructure **144** (FIG. 1), a satellite network including a downlink dish **114** (FIG. 1), and/or any other suitable system. In some circumstances, when the programming is received via programming interface **302**, the receiving device **118** is operable to present the programming to one or more output devices, e.g., display **124** (FIG. 1) and/or speakers **126** (FIG. 1). In other and/or additional circumstances, the programming may include software and/or media upon which another processing device may operate, such as a PC **132** (FIG. 1).

In some embodiments, one or more transceivers **322** may be coupled to the programming interface **302**. A transceiver **322** coupled to the programming interface **302** may be operable to facilitate the communication of the authorized programming **208** (FIG. 2) from communication system **108** in a

wired, wireless, and/or other suitable manner. Alternatively, or in addition, a transceiver **322** of the programming interface **302** may be operable to communicate in a bi-directional manner. That is, the transceiver **322** may be operable to both receive information and to send information.

In one example, a transceiver **322** of the programming interface **302** may facilitate communication of authorized programming **208** from a program distributor **106** into the receiving device **118**. In other example, a transceiver **322** of the programming interface **302** may facilitate communication of an acknowledgement to a program distributor **106** that authorized programming **208** is used. In other words, there are some embodiments where the transceiver includes the electronic hardware operable to convert between information used by the programming processing system **306** and information communicable through the communication system **108**.

The receiving device **118** has a receiving device PAL **100r**. A receiving device PAL **100r** is operable to transmit and receive information between the receiving device **118** and a mobile device **140**. For example, as described above, the receiving device PAL **100r** may facilitate communication of authorization requests **204a**, **204b** (FIG. 2), authorization **206a**, **206b** (FIG. 2), and/or authorized programming **208a**, **208b** (FIG. 2). Communication between the receiving device **118** and the mobile device **140** may be by a request/response mechanism, a master/slave mechanism, or any other suitable mechanism.

The receiving device PAL **100r** may be coupled with one or more transceivers **324a**, **324b**. A transceiver coupled to the receiving device PAL **100r** may be operable to facilitate the communication between the receiving device **118** and a mobile device **140**. The transceiver may communicate over a wired, a wireless, and/or other suitable media.

In some embodiments, separate transceivers **322**, **324a**, **324b** may communicate with separate targets and/or devices. In a first example, different transceivers **322**, **324a**, **324b** may be used for receiving authorized programming than are used for communicating information with a mobile device **140**. In a second example, one transceiver may be used for sending an authorization request **204a**, **204b**, another transceiver may be used for receiving an authorization **206a**, **206b**, and a different transceiver may be used for sending authorized programming **208a**, **208b**. Accordingly, it is to be appreciated that in some embodiments, one or more transceivers may be commonly coupled for use within the programming interface **302** and the receiving device PAL **100r**.

In some embodiments, the receiving device PAL **100r** may be configured as a single device with logic capable of facilitating communication of authorization requests **204a**, **204b**, authorization **206a**, **206b**, and/or authorized programming **208a**, **208b**. For example, a particular grouping of hardware components and/or software logic may operate to facilitate all communication between the receiving device **118** and the mobile device **140**.

Alternatively, the receiving device PAL **100r** may be configured as two or more devices with multiple interfaces acting in cooperation. For example, the receiving device PAL **100r** may be configured as one or more devices having a command interface **334**, a first mobile device interface **336**, and a second mobile device interface **338**. A command interface **334** may be operable to communicate an authorization request **204a**, **204b** to a mobile device **140**. A first mobile device interface **336** may be operable to receive authorization **206a**, **206b** from the mobile device **140**. A second mobile device interface **338** may be operable to communicate authorized programming **208a**, **208b** to the mobile device **140**.

In embodiments where the receiving device PAL **100r** is configured with two or more devices and multiple interfaces, the interfaces may have separate hardware components and/or software logic primarily for controlling their own functions. Additionally or alternatively, the interfaces **334**, **336**, **338** of the receiving device PAL **100r** may share hardware components and/or software logic between their functions. For example, in an embodiment with multiple interfaces, communications to the mobile device **140** may be facilitated with one interface, and communications from the mobile device **140** may be facilitated with another interface. In another example, an authorization request **204a**, **204b** may be communicated through one interface (e.g., interface **334**), an authorization **206a**, **206b** may be communicated through another interface (e.g., interface **336**), and authorized programming **208a**, **208b** may be communicated through a third interface, (e.g., interface **338**).

Accordingly, it is to be appreciated that within the PAL **100r**, various interfaces may be conceptually described, and the devices that implement the interfaces may or may not be physically separate, and may or may not share hardware components and/or software logic. Additionally, in some embodiments, transceivers **324a**, **324b** may be primarily used by single interfaces **334**, **336**, **338**, and in other embodiments, transceivers **324a**, **324b** are cooperatively shared by interfaces **334**, **336**, **338**. Thus, it is to be appreciated that in embodiments of the receiving device PAL **100r**, one or more transceivers may be coupled to one or more interfaces to facilitate communication of authorization requests, authorization, and programming with a mobile device **140**.

The interfaces **334**, **336**, **338** within the PAL **100r** may comprise hardware, logic, memory space, data structures, and/or other information useful for generating and/or passing authorization requests **204a**, **204b**, authorization, **206a**, **206b**, and programming **208a**, **208b**, through a receiving device **118**. In some embodiments, all or parts of one or more interfaces **334**, **336**, **338** are closely coupled with the programming processing system **306** and/or the receiving device memory **308**. Thus, the programming processing system **306** is configured to operationally control the interfaces **334**, **336**, **338**. In other embodiments, the interfaces **334**, **336**, **338** primarily operate without control from programming processing system **306** and/or the receiving device memory **308**. In such embodiments where one or more interfaces **334**, **336**, **338** are not primarily controlled by the programming processing system **306** and/or the receiving device memory **308**, the interfaces **334**, **336**, **338** have logic to separately process and/or generate communications related to authorized programming and pass the communications through the receiving device **118**.

The receiving device PAL **100r** may be used when the receiving device **118** is in reception range of the mobile device **140**. When the devices are in reception range, a communication path may be established between the receiving device **118** and the mobile device **140**. Exemplary communication systems suitable to establish a communication path include systems such as infrared, RF, Bluetooth, or other like systems.

Additionally, or alternatively, the receiving device PAL **100r** may also facilitate communication when the receiving device **118** is not in reception range of the mobile device **140**. When the devices are not in reception range to each other, communication may be through an intermediate communication network. For example, in some embodiments, the receiving device **118** may use a back-channel wired or wireless communication system **212** (FIG. 2) to pass communications through communication system **108** and/or cellular network

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142 (FIG. 1). In embodiments where the receiving device 118 is passing communications through communication system 108, a mobile device 140 may use an available cellular or other communication network to communicate with the receiving device 118.

The user interface 304 of receiving device 118 may comprise wired and/or wireless devices and/or logic that permit a user to enter a user request 202a, 202b into the receiving device 118. For example, in some embodiments, a user interface 304 may have an infrared receiver (not shown), a radio receiver (not shown), and/or an electro-mechanical receiver (not shown) for accepting user requests 202a, 202b.

The user request 202a, 202b may be generated by an external source and communicated to the receiving device 118 by the external source. For example, external sources for generating and communicating a user request 202a, 202b may include, but are not limited to, a remote control 128, other keyed input devices (not shown), and/or other controllers of the presentation device 120 (FIG. 1) and/or receiving device 118. In some embodiments, a software algorithm system (not shown) may be used wherein a menu or the like is presented to a user. Accordingly, a user request 202a, 202b may be generated via a displayed menu system.

The receiving device memory 308 of the receiving device 118 may be operatively used to store several integrated and/or component blocks of software code and/or data. For example, in some embodiments, receiving device memory 308 may store receiving device logic 330, program distribution account information 210a, and/or authorized programming 208. Receiving device memory 308 may include either volatile or non-volatile storage, or both.

The programming processing system 306 of receiving device 118 includes any single device or combination of devices for operationally controlling the receiving device 118. The programming processing system 306 of receiving device 118 may be operationally controlled by the receiving device logic 330. In some embodiments, the primary function of programming processing system 306 is to process authorized programming 208.

Alternatively or additionally, the programming processing system 306 may process a user request 202a, 202b and generate an authorization request 204a, 204b (FIG. 2). The programming processing system 306 may cooperatively use the receiving device PAL 100r to control communications with a mobile device 140. For example, at some times, the programming processing system 306 may control transmission of authorization requests 204a, 204b and/or authorized programming 202a, 202b (FIG. 2) to a mobile device 140. In other instances, the programming processing system 306 may receive from the mobile device 140, authorization 206a, 206b to use the authorized programming 208.

The mobile device 140 may have a mobile interface 312 for facilitating communication with other mobile devices, fixed point devices, electronic communication equipment, and/or the like. In some embodiments, one or more transceivers 326 may be coupled to the mobile interface 312. A transceiver 326 coupled to the mobile interface 312 may be operable to facilitate communication between the mobile device 140 and a program distributor 106. For example, a transceiver 326 coupled to the mobile interface 312 may be operable to facilitate communication of an authorization request 204c to a program distributor 106, and/or to receive authorization 206c from a program distributor 106 in a wired, wireless, and/or like manner.

In some embodiments, the mobile device 140 has a mobile device PAL 100m to transmit and receive information between the mobile device 140 and a receiving device 118.

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For example, as described above, the mobile device PAL 100m may facilitate communication of authorization requests 204a, 204b (FIG. 2), authorization 206a, 206b (FIG. 2), and/or authorized programming 208a, 208b (FIG. 2). Communication between the mobile device 140 and the receiving device 118 may be by any suitable mechanism employed by the devices.

The mobile device PAL 100m may be coupled with one or more transceivers 328a, 328b. A transceiver 328a, 328b coupled to the mobile device PAL 100m may be operable to facilitate communication between the mobile device 140 and a receiving device 118 when the devices are in reception range. The transceiver 328a, 328b may operate in a wired, a wireless, and/or a like manner.

In some embodiments, separate transceivers 326, 328a, 328b may communicate with different targets. In a first example, different transceivers 326, 328a, 328b may be used for communicating information with a target distributor 106 than are used for communicating information with a receiving device 118. In a second example, one transceiver may be used for receiving an authorization request 204a, 204b, another transceiver may be used for sending an authorization request 204c. In a third example, one transceiver may be used for receiving authorization 206c, and another transceiver may be used for sending authorization 206a, 206b. In a fourth example, another transceiver may be used to receive authorized programming 208a, 208b. Accordingly, it is to be appreciated that in some embodiments, the functions of one or more transceivers 326, 328a, 328b may be commonly coupled within a single hardware device for carrying out communications of both the mobile interface 312 and the mobile device PAL 100m.

In some embodiments, the mobile device PAL 100m may be configured as a single device with logic capable of facilitating communication of authorization requests 204a, 204b, 204c, authorization 206a, 206b, 206c, and/or authorized programming 208a, 208b. For example, a particular grouping of hardware components and/or software logic may operate to facilitate all communication between the mobile device 140, the receiving device 118, and the program distributor 106. Thus, the single device and/or logic may cooperatively use the mobile interface 312 and/or the mobile device PAL 100m.

Alternatively, the mobile device PAL 100m may be configured as two or more devices with multiple interfaces acting in cooperation. For example, the mobile device PAL 100m may have a first communication interface 340 operable to communicate program distribution account information 210 to a program distributor 106 and/or operable to receive authorization 206c from a program distributor 106. The mobile device PAL 100m may have a second communication interface 342 operable to communicate authorization 206a, 206b to a receiving device 118 and/or operable to receive authorized programming 208a, 208b from the receiving device 118.

In embodiments where the mobile device PAL 100m is configured with two or more devices and multiple interfaces, the interfaces may have separate hardware components and/or software logic primarily for controlling their own functions. Additionally or alternatively, the interfaces 340, 342 of the mobile device PAL 100m may share hardware components and/or software logic between their functions. For example, in an embodiment with multiple interfaces, an authorization request 204c to a program distributor 106 may be communicated through one interface, and authorization 206c may be communicated through another interface. In another example, an authorization request 204a, 204b may be received with one interface, and authorization 206a, 206b

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may be transmitted with another. In still another example, programming **208a**, **208b** may be communicated with another interface. Accordingly, it is to be appreciated that within the PAL **100m**, various interfaces may be described, and the devices that implement the interfaces may or may not be physically separate, and may or may not share hardware components and/or software logic.

The interfaces **340**, **342** within the PAL **100m** may comprise hardware, logic, memory space, data structures, and/or other information useful for generating and/or passing authorization requests **204a**, **204b**, **204c**, authorization, **206a**, **206b**, **206c**, and programming **208a**, **208b**, through a mobile device **140**. In some embodiments, all or parts of one or more interfaces are closely coupled with the mobile processing system **316** and/or the mobile device memory **318**. Thus, the mobile processing system **316** is configured to operationally control the interfaces. In other embodiments, the interfaces primarily operate without control from mobile processing system **316** and/or the mobile device memory **318**. In such embodiments where one or more interfaces are not primarily controlled by the processing system **316** and/or the mobile device memory **318**, the interfaces have logic for generating and/or processing in the mobile device **140**.

The mobile device PAL **100m** may be used when the mobile device **140** and a receiving device **118** are in reception range to each other. Communication via the mobile device PAL **100m** may be by a request/response configuration, a master/slave configuration, or any other suitable configuration corresponding to a cooperative configuration of a receiving device **118**.

In an additional or alternative embodiment, the mobile device **140** may not be in reception range of a receiving device **118**. In cases where the devices are not in reception range, the mobile device PAL **100m** may communicate with the receiving device **118** through an intermediate communication network, such as communication system **108** and/or cellular network **142** (FIG. 1).

A user request **202c** may be generated a user and/or by an external source and communicated to the mobile device **140** by the external source. For example, a user may use an input mechanism integrated into the mobile device **140** to enter the user request **202c** to use authorized programming **208**. In another example, a user request to use authorized programming **202a**, **202b**, **202c** may be received with the mobile interface **312** and/or the mobile device PAL **100m**. For example, in some instances, a user request **202c** may be passed into the mobile device as part of a text message, an email message, or some other suitable message communicated through communication system **108**.

The mobile device memory **318** of the mobile device **140** may be operatively used to store several integrated and/or component blocks of software code and/or data. For example, in some embodiments, mobile device memory **318** may store mobile device logic **332**, program distribution account information **210**, and/or authorized programming **208a**, **208b**. Mobile device memory **318** may include either volatile or non-volatile storage, or both.

In some embodiments, the program distribution account information **210** corresponds to some or all of the corresponding program distribution account information **210a** stored in the receiving device memory **308** of the receiving device **118**. In some embodiments, alternatively or additionally, the program distribution account information **210** may be directly entered into the mobile device **140** by a user, may be received from the receiving device **118**, or may be received from some other device. For example, in some embodiments, the information may be manually entered by a user of the mobile

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device **140** via the mobile device's input system, and/or in other embodiments, the information may be received directly from a program distributor **106** or some other source.

The mobile processing system **316** of mobile device **140** includes any single device, or combination of devices, for operationally controlling the mobile device **140**. The mobile processing system **316** of mobile device **140** may be operationally controlled by the mobile device logic **332**. In some embodiments, the primary function of mobile processing system **316** is to process the mobile communications of the mobile device **140**. In other embodiments, however, the mobile processing system **316** may also generate authorization request **204c** (FIG. 2) and process received authorization **206c**.

When an authorization request **204c** is generated from a user request **202c** and/or an authorization request **204a**, **204b**, the authorization request **204c** is communicated to a program distributor **106**. The authorization request **204c** may have a request to use programming **202a**, **202b** from a receiving device **118**, and/or may have a request to use programming **202c** from a mobile device **140**.

An authorization **206c** to use the programming is received by the mobile device **140** from a program distributor **106**. In some embodiments, a same or corresponding authorization **206a**, **206b** to use the programming is generated and communicated to a receiving device **118**. In some embodiments, the authorization **206a**, **206b**, **206c** to use programming permits the receiving device **118** to use the authorized programming **208**. In some embodiments, the authorization **206a**, **206b**, **206c** to use programming permits the mobile device **140** to receive, store, and or use the programming **208a**, **208b**.

Referring to FIGS. 2 and 3, several examples of interaction between a receiving device **118** and a mobile device **140** are now described. These examples are merely non-limiting examples of how authorized programming **208**, **208a**, **208b** may be authorized and communicated with receiving devices **118** and mobile devices **140**.

In a first example, a user is willing to pay an additional fee to watch a particular program (e.g., pay-per-view) offered by a program distributor **106**. With a remote device **128**, the user may enter a user request **202a**, which is received by a receiving device **118**. The programming processing system **306** of the receiving device **118** works cooperatively with the user interface **304** and the receiving device logic **330**. The programming processing system **306** may then generate an authorization request **204a** to use authorized programming **208**, and the authorization request **204a** may have program distribution account information **210a** embedded within. The programming processing system **306**, working in cooperation with the receiving device PAL **100r**, may recognize that a mobile device **140** is in reception range of the receiving device **118**. Accordingly, the authorization request **204a** may be communicated between the receiving device PAL **100r** and the mobile device PAL **100m**.

Upon receipt of an authorization request **204a** to use authorized programming **208**, the mobile processing system **316** of the mobile device **140** may work in cooperation with the mobile device PAL **100m** and the mobile device logic **332**. The program distribution account information **210a** may be processed and stored in the mobile device memory **318** as program distribution account information **210**. Subsequently, the mobile processing system **316** of the mobile device **140** may work in cooperation with the mobile device logic **332** to generate an authorization request **204c**. The authorization request **204c** may have program distribution account information **210** embedded therein. The authorization request

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204c may then be communicated to the program distributor 106 through mobile device PAL 100m and/or mobile interface 312.

If the program distributor 106 authorizes the use of programming 208, the program distributor 106 may respond to the authorization request 204c by sending an authorization 206c back to the mobile device 140. Upon receiving an authorization 206c from the program distributor 106, the authorization 206c may be further processed by the mobile processing system 316. The mobile processing system 316 may generate authorization 206a and communicate authorization 206a to the receiving device 118. Authorization 206a may permit the receiving device 118 to use authorized programming 208, for example, by presenting authorized programming 208 on a presentation device 120 (FIG. 1) for the user.

In another example, the user that purchased authorization to use the particular pay-per-view program may further want to use the pay-per-view program with his mobile device 140. In addition to the example previously presented, the user's request for authorization may contain an additional request for authorization to use the programming on his mobile device. If the additional use is permitted by the program distributor 106, then some or all of the authorized programming 208 may be communicated to the mobile device 140 as authorized programming 208a. The authorized programming 208a may then be stored in mobile device memory 318 and/or presented to the mobile device 140 user via a presentation mechanism, for example a display 214, of the mobile device 140.

FIG. 4 is a flowchart illustrating a process used by an embodiment of a system to communicate authorized programming between a receiving device and a mobile device. In this regard, each described process may represent a module, segment, or portion of code, which comprises one or more executable instructions for implementing the specified logical function(s). It should also be noted that in some implementations, the functions noted in the process may occur in a different order, may include additional functions, may occur concurrently, and/or may be omitted.

With respect to FIG. 4, the process 400 is ongoing with operation of the mobile device 140 and is illustrated as starting at 402. At 404, a mobile device 140 communicates program distribution account information 210, or a portion thereof, to an authorizing party, such as a program distributor 106. At 406, the mobile device 140 receives authorization to use programming 206c from the authorizing party. At 408, the mobile device 140 communicates the authorization to use programming 206c to a receiving device 118. The process ends at 410.

In some embodiments, the authorization request 204c is communicated to an authorizing party, such as, but not limited to, a content provider 104a-104i (FIG. 1), an information provider 138a-138i, a program distributor 106, and/or another third party. In some instances, where the program distributor 106 is not the authorizing party, the authorization 206c may be communicated by the authorizing party to the program distributor 106 for communication to the mobile device 140. Alternatively, or additionally, the authorization 206c may be communicated to the mobile device 140 by the authorizing party.

It is to be appreciated that the examples described above do not represent the full spectrum of requests, authorizations, and communications that may be generated with the embodiments illustrated in FIGS. 1-4. Other authorization requests may be made, other program distribution account information and/or individual account information may be communicated, and/or other programming may be authorized.

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While various embodiments have been described hereinabove, it is to be appreciated that various changes in form and detail may be made without departing from the spirit and scope of the invention(s) presently or hereafter claimed.

The invention claimed is:

1. A method to receive authorization to use programming, comprising:

receiving at a mobile device, a first request command to use authorized programming;

communicating a second request to use the authorized programming and program distribution account information from the mobile device to a program distributor;

receiving at the mobile device, from the program distributor, authorization to use the authorized programming, the authorization conditioned on the communicated program distribution account information;

communicating the authorization to a receiving device via the mobile device; and

receiving the authorized programming at the mobile device from the receiving device.

2. The method of claim 1 wherein the authorization to use the authorized programming includes authorization to communicate the authorized programming to an authorized endpoint device.

3. The method of claim 1 wherein the authorized programming is authorized on a per use basis.

4. The method of claim 1 wherein the authorized programming is authorized for a future use.

5. The method of claim 1 wherein the act of receiving the first request command includes receiving input via a user interface integrated in the mobile device.

6. The method of claim 5 wherein the act of communicating the program distribution account information from the mobile device to the program distributor includes the act of entering information associated with the program distribution account information via the user interface integrated in the mobile device.

7. The method of claim 1 wherein the act of receiving the first request command includes receiving the first request from the receiving device.

8. The method of claim 1 wherein the act of communicating the program distribution account information from the mobile device to the program distributor includes retrieving the program distribution account information from an internal non-volatile memory of the mobile device.

9. A receiving device to distribute authorized programming, comprising:

at least one memory configured to store authorized programming;

at least one transceiver; and

a processing system coupled to the at least one memory and the at least one transceiver, the processing system configured to operationally control the receiving device to perform the acts of:

generating a request to use authorized programming;

communicating the request via the at least one transceiver to a program distributor;

receiving authorization to distribute the authorized programming; and

distributing the authorized programming to at least two endpoint devices, the distribution conditioned on the receipt of the received authorization.

10. The receiving device of claim 9, comprising:

a user interface coupled to the processing system, the user interface configured to receive information associated with the request to use authorized programming.

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11. The receiving device of claim 9 wherein the at least one transceiver includes a wireless cellular transceiver integrated in the receiving device.

12. The receiving device of claim 9 wherein the act of communicating the request via the at least one transceiver to the program distributor includes:

communicating the request through an associated mobile device.

13. The receiving device of claim 12 wherein the act of receiving authorization to distribute the authorized programming includes:

receiving the authorization from the associated mobile device.

14. The receiving device of claim 9 wherein the processing system is configured to operationally control the receiving device to perform the act of:

restricting distribution of the authorized programming from endpoint devices that are not authorized to receive the authorized programming.

15. The receiving device of claim 9 wherein one of the at least two endpoint devices is an Internet connectable TV.

16. A mobile device, comprising:

a memory to store program distribution account information; and

a mobile device programming authorization module configured to:

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receive a first request command to use authorized programming;

communicate to a program distributor the program distribution account information;

communicate to the program distributor a second request to use the authorized programming;

receive an authorization from the program distributor, the authorization conditioned on the program distribution account information and the authorization permitting distribution of the authorized programming to at least two endpoint devices; and

communicate the authorization to a receiving device.

17. The mobile device of claim 16 wherein the authorized programming is software configured for use by a game system and wherein at least one of the at least two endpoint devices is the game system.

18. The mobile device of claim 16, comprising:

a user interface integrated in the mobile device, wherein the first request command is received via the user interface.

19. The mobile device of claim 18 information associated with the program distribution account information is received via the user interface integrated in the mobile device.

20. The mobile device of claim 18 the first request command is received from the receiving device.

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